

9-2  
Adding and Subtracting  
Rational  
Expressions

## LCM

of 8 and 12

$$\begin{array}{c} \wedge \\ 2^3 \end{array} \quad \begin{array}{c} \wedge \\ 4^1 \cdot 3^1 \\ 2^2 \cdot 3 \end{array}$$

$2^3 \cdot 3 = 24$   
Every factor to its highest power

## LCM

of 6 and 4

## LCM

of

$$\begin{array}{c} 15a^2bc^3 \\ 3 \cdot 5 \end{array} \quad \begin{array}{c} 16b^5c^2 \\ 2^4 \end{array} \quad \begin{array}{c} 20a^3c^6 \\ 2^2 \cdot 5 \end{array}$$

$$2^4 \cdot 3 \cdot 5 \cdot a^3 \cdot b^5 \cdot c^6$$

$$\boxed{240a^3b^5c^6}$$

Ex:

$$\frac{5a^2}{6b} + \frac{9}{14a^2b^2} = \frac{35a^4b + 27}{42a^2b^2}$$

$\frac{5a^2}{6b} \xrightarrow{2 \cdot 3} \frac{10a^2}{12b}$   
 $\frac{9}{14a^2b^2} \xrightarrow{2 \cdot 7} \frac{9}{14a^2b^2}$   
 $\frac{10a^2}{12b} \xrightarrow{2 \cdot 3 \cdot 7} \frac{35a^4b}{42a^2b^2}$   
 $\frac{9}{14a^2b^2} \xrightarrow{3} \frac{27}{42a^2b^2}$

Ex:

$$\begin{array}{r} x+10 \\ 3x-15 \\ \hline 3(x-5) \end{array} \quad \begin{array}{r} 3x+15 \\ 6x-30 \\ \hline 6(x-5) \end{array}$$

LCD  $6(x-5)$

$$\frac{2x+20}{6(x-5)} - \frac{3x-15}{6(x-5)}$$

$$\frac{-1(x-5)}{6(x-5)} = -\frac{1}{6}$$

Ex:

$$\frac{1}{y-4} - \frac{1}{y+4} \quad \text{LCD } (y-4)(y+4)$$

$$\frac{y+4 - y+4}{(y-4)(y+4)}$$

$$\frac{8}{(y-4)(y+4)}$$

Do:

$$1. \frac{1}{x^2+2x+1} - \frac{1}{x^2-1} = \frac{-2}{(x+1)^2(x-1)}$$

LCD =  $(x+1)^2(x-1)$

$$2. \frac{1}{y^2-y-2} + \frac{1}{y^2+y} = \frac{2(y-1)}{y(y-2)(y+1)}$$

Ex:

$$\frac{\frac{x-1}{x}}{1-\frac{1}{x}} \cdot \frac{x^2-1}{x}$$

$$\frac{(x-1)(x+1)}{x} \cdot \frac{x}{(x-1)} = (x+1)$$

Ex:

$$\frac{a^{-1} - x^{-1}}{a^{-2} - x^{-2}}$$

$$\frac{\frac{1}{a} - \frac{1}{x}}{\frac{1}{a^2} - \frac{1}{x^2}} = \frac{\frac{x-a}{ax}}{\frac{x^2-a^2}{a^2x^2}}$$

$$\frac{\cancel{(x-a)}}{ax} \cdot \frac{a^2x^2}{\cancel{(x-a)}(x+a)} = \frac{ax}{(x+a)}$$

Do:

$$\frac{1 - hk^{-1}}{h^{-1} - k^{-1}}$$

HW

p482-483

23-33odd

38-40